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Summary of Recent Phoenix Center Research

George Ford
Chief Economist
Phoenix Center

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Organization of Presentation

- Organization of Presentation:
  - Why is Franchise Reform Important?
    - Realistic Expectations of Industry Structure
    - Terrestrial versus Wireless/Satellite Competition
    - The Economics of Entry
  - How Build-Out Requirements Deter Entry
  - How Build-Out Requirements Exacerbate the Digital Divide
  - How Franchise Reform will Actually Produce MORE Revenue (the "Competition Dividend")
  - The Consumer Welfare Cost of Franchise Reform Delay
  - A la Carte Research

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"Equilibrium Industry Structure"

- Firms enter only if they make a profit
- Entry stops when "the next firm" expects a negative profit
- When entry stops, the existing number of firms is the equilibrium number of firms (N^*)
  - No incentive to enter
  - No incentive to exit

Equilibrium Industry Structure: *Where We are Today:*

- Given high fixed and sunk costs, there will be FEW local networks
  - Telephone
  - Cable
  - Some Fringe Players (wireless, satellite, WiMax, etc.)
- So, rig the game in favor of entry by new firms and expansion by existing firms into related markets
  - Eliminate regulatory entry barriers
  - Impede strategic entry barriers
  - Expand markets

How many firms can we get? (formally stated)

$$N^* = \sqrt{\frac{\phi S}{E}}$$

N^* = Equilibrium Number of Firms (symmetric)
ϕ = Weakness of Competition
S = Market Size in Expenditure (isoelastic demand)
E = Sunk Entry Costs

Sources: Sutton (Sunk Cost and Market Structure), Duvall and Ford (PCPP10)

When will a firm enter?

- Do gross profits (*d*) exceed entry costs (*e*)?

$$\boldsymbol{d - e \geq 0}$$

- Gross profits (*d*) are revenues less variable costs.
- Entry costs (*e*) are fixed/sunk

Do you want Facilities-based Entry?

- ☑ Increase Gross Profits

- ☑ Reduce Entry Costs

But not in ways harmful to consumers!

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Factors Driving Profits (*d*)

- Market Size (+)
- Intensity of Price Competition (-)
- Product Differentiation (+)
- Network Overlap (-)

Per-Firm Profits are also a function of the number of firms in a market!

Numerical Example 1

(Table 1, PCPP 21)

Equilibrium Number of Firms, $N^* = 3$			
N	d	e	$d - e$
1	100	15	85
2	40	15	25
3	20	15	5
4	12	15	-3
5	8	15	-7
6	5	15	-10
7	4	15	-11

Numerical Example 2

(Higher Gross Profits)

Equilibrium Number of Firms, $N^* = 5$			
N	d	e	$d - e$
1	200	15	185
2	80	15	65
3	40	15	25
4	24	15	9
5	16	15	1
6	10	15	-5
7	8	15	-7

Factors Driving Profits (*d*)

- Market Size (+)
- Intensity of Price Competition (-)
- Product Differentiation (+)
- Network Overlap (-)

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Numerical Example 3

(Intensity of Price Competition)

N	*e*	Intense Price Competition		Moderate Price Competition		Perfect Collusion	
		d	*d - e*	*d*	*d - e*	*d*	*d - e*
1	15	100	85	100	85	100	85
2	15	28	13	40	25	50	35
3	15	12	-3	20	5	33	18
4	15	6	-9	12	-3	25	10
5	15	4	-11	8	-7	20	5
6	15	3	-12	5	-10	17	2
7	15	2	-13	4	-11	14	-1

Headcount and Competition

- With large fixed/sunk costs, headcounts can be deceiving
  - A large number of firms may indicate collusion
  - A small number of firms may indicate intense price competition

Numerical Example 3

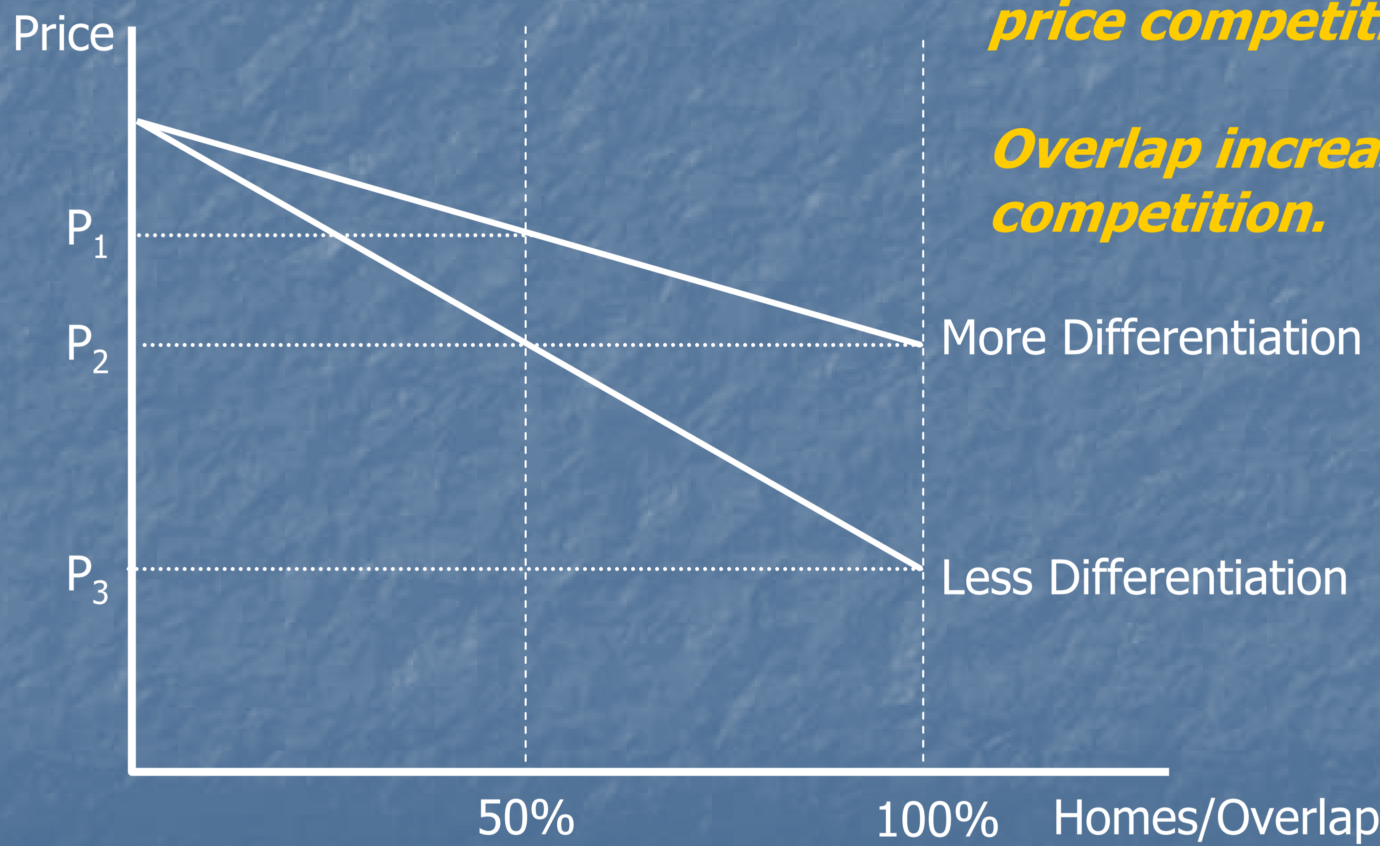
(Intensity of Price Competition)

N	*e*	Intense Price Competition		Moderate Price Competition		Perfect Collusion	
		d	*d - e*	*d*	*d - e*	*d*	*d - e*
1	15	100	85	100	85	100	85
2	15	28	13	40	25	50	35
3	15	12	-3	20	5	33	18
4	15	6	-9	12	-3	25	10
5	15	4	-11	8	-7	20	5
6	15	3	-12	5	-10	17	2
7	15	2	-13	4	-11	14	-1

Factors Driving Profits (*d*)

- Market Size (+)
- Intensity of Price Competition (-)
- Product Differentiation (+)
- Network Overlap (-)

Product Differentiation and Overlap



Differentiation weakens price competition.

Overlap increases price competition.

Phoenix Center Policy Paper No. 21, Figure

The other way to promote entry: Reduce Entry Costs

Four Types of Entry Costs (e)

- Technological Entry Costs (+)
- Strategic Entry Costs (+)
- Regulatory Entry Costs (+)
- Spillovers (-)

Types of Entry Costs (*e*)

- Technological Entry Costs (+)
  - Entry costs that are unavoidable to provide service
    - Network
    - Operating Capital
    - Advertising
    - Building Leases
    - Etc…

Types of Entry Costs (*e*)

- Strategic Entry Costs (+)
  - Entry costs that arise solely because of incumbent firm actions intended to raise entry costs
    - Excessive Advertising
    - Lock-in/Penalty Contracts
    - Discriminatory Access to Inputs (e.g. programming)

Types of Entry Costs (*e*)

- Regulatory Entry Costs (+)
  - Rules that raise entry costs above technological entry costs
    - Build-out Requirements
    - Gold-plating Networks
    - Entry Fees
    - E911 and other social programs
  - Often mingled with Strategic Entry Costs
  - If socially-desirable, there may be a trade-off between entry and the provision of the service (e.g., E911); Cost-benefit analysis should be conducted

Types of Entry Costs (*e*)

- Spillovers (-)
  - Spillovers exist when a firm can use existing assets to enter related markets.
  - This firm has lower entry costs than a firm without existing assets that can be leveraged into a related market
    - Network (DSL over Copper; Cable Broadband over Coax; Fiber over existing rights-of-way; customer relationships)

Numerical Example 1
(Table 1, PCPP 21)

Equilibrium Number of Firms, *N** = 3			
N	*d*	*e*	*d* - *e*
1	100	15	85
2	40	15	25
3	20	15	5
4	12	15	-3
5	8	15	-7
6	5	15	-10
7	4	15	-11

Numerical Example 4

(Reduced Entry Costs)

Equilibrium Number of Firms, *N** = 6			
N	*d*	*e*	*d* - *e*
1	100	5	95
2	40	5	35
3	20	5	15
4	12	5	7
5	8	5	3
6	5	5	0
7	4	5	-1

"Convergence" Reduces Entry Costs

- Convergence is relevant only when it reduces entry costs
- Effects of convergence are generally limited to firms with existing assets that can be "spilled over" into related markets
- For policymakers, "convergence" is only a useful concept when applied *to particular firms* – it is not a panacea "that lets anybody enter"
- Examples of Spillovers:
  - Cable VoIP
  - Bell IPTV/Fiber Deployment
  - Electric Utilities/BPL
- Highly unlikely that somebody can successfully build a new network from scratch…

Equilibrium Industry Structure:
Summary

- There will be few local networks
- So, rig the game in favor of entry by new firms and expansion by existing firms into related market
  - Eliminate regulatory entry barriers
  - Impede strategic entry barriers
  - Expand markets

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Cable Build-Out Rules

- An example of an area where public policy is raising the cost of entry—and a place where policymakers can act to reduce entry costs
- Phoenix Center Policy Paper No. 22
  - Build-out requirements deter entry by raising entry costs and reducing profits
  - "build-out requirements are of central importance to competitive entry because these requirements impact the threshold question of whether a potential competitor will enter the local exchange market at all." FCC No. 97-346 (1997)

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Build-Out Rules

- Unambiguously Bad for Entrants
- May be good for Consumers
- May be good for Incumbents
- But can't be good for both Consumers and Incumbents at the same time

(So why do both policymakers and incumbents advocate for build-out rules?)

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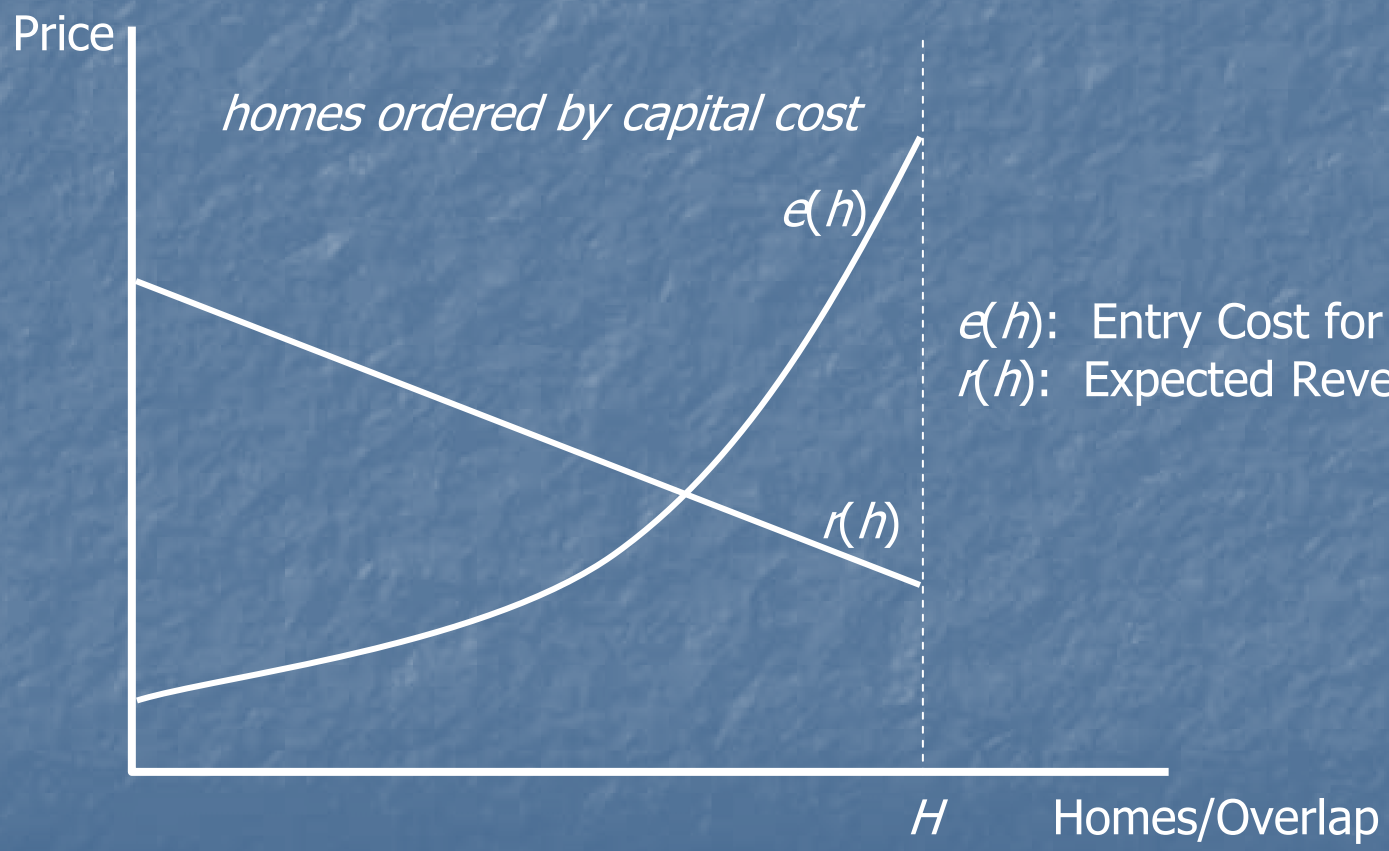
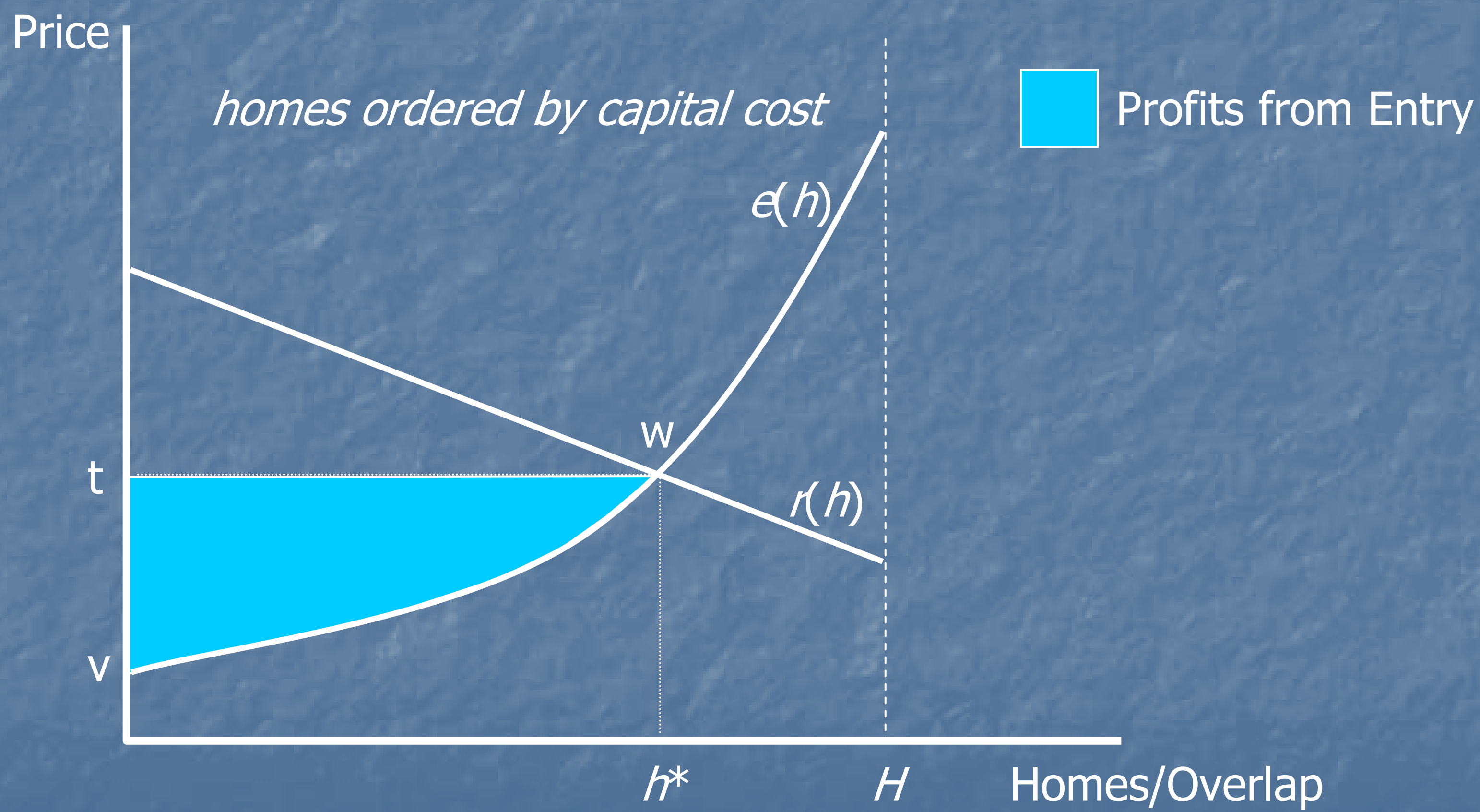
Build-Out Rule:
Graphical Explanation



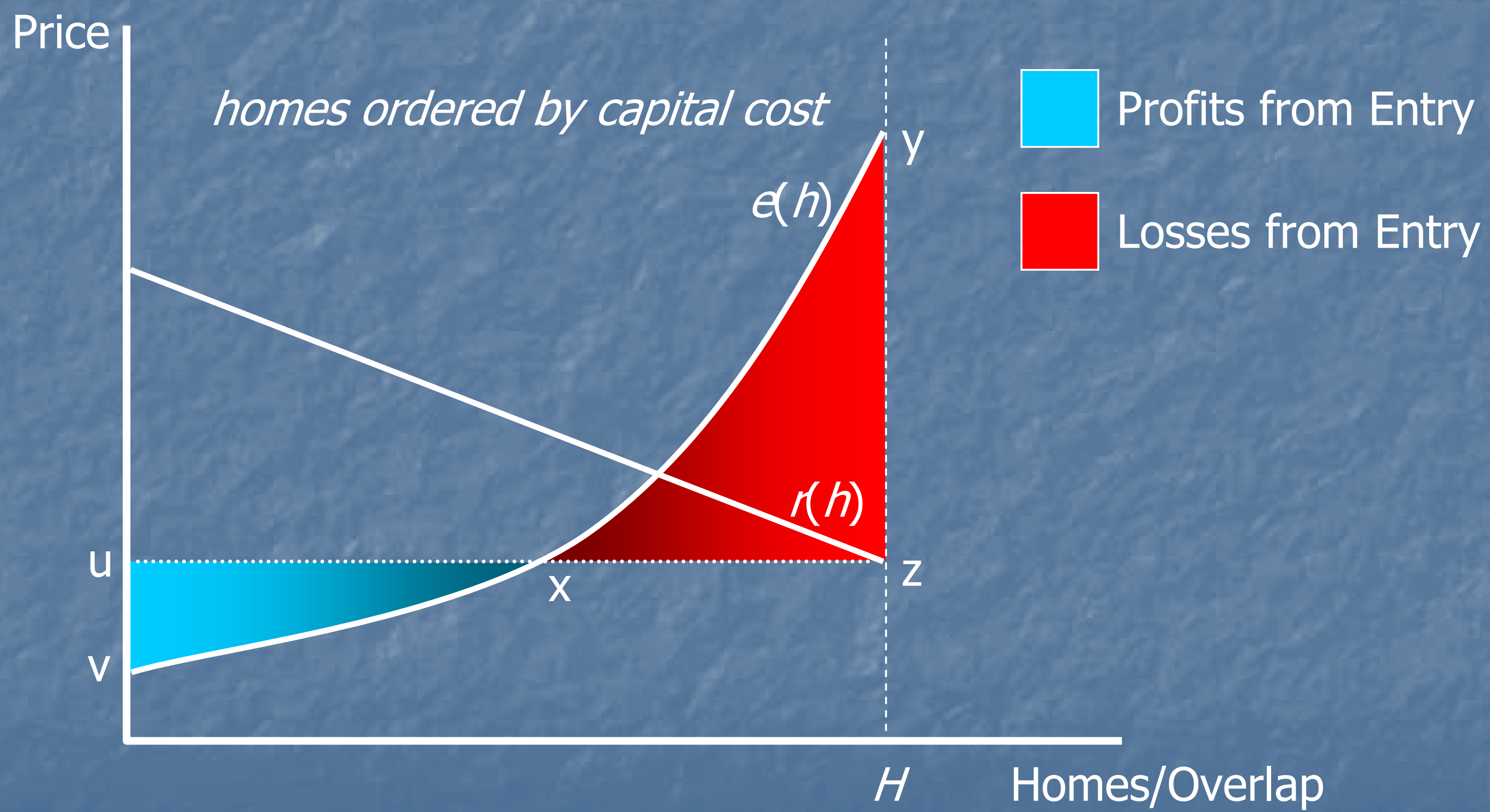
e(*h*): Entry Cost for home *i*
r(*h*): Expected Revenue for home *i*

Phoenix Center Policy Paper No. 22, Figure 1.

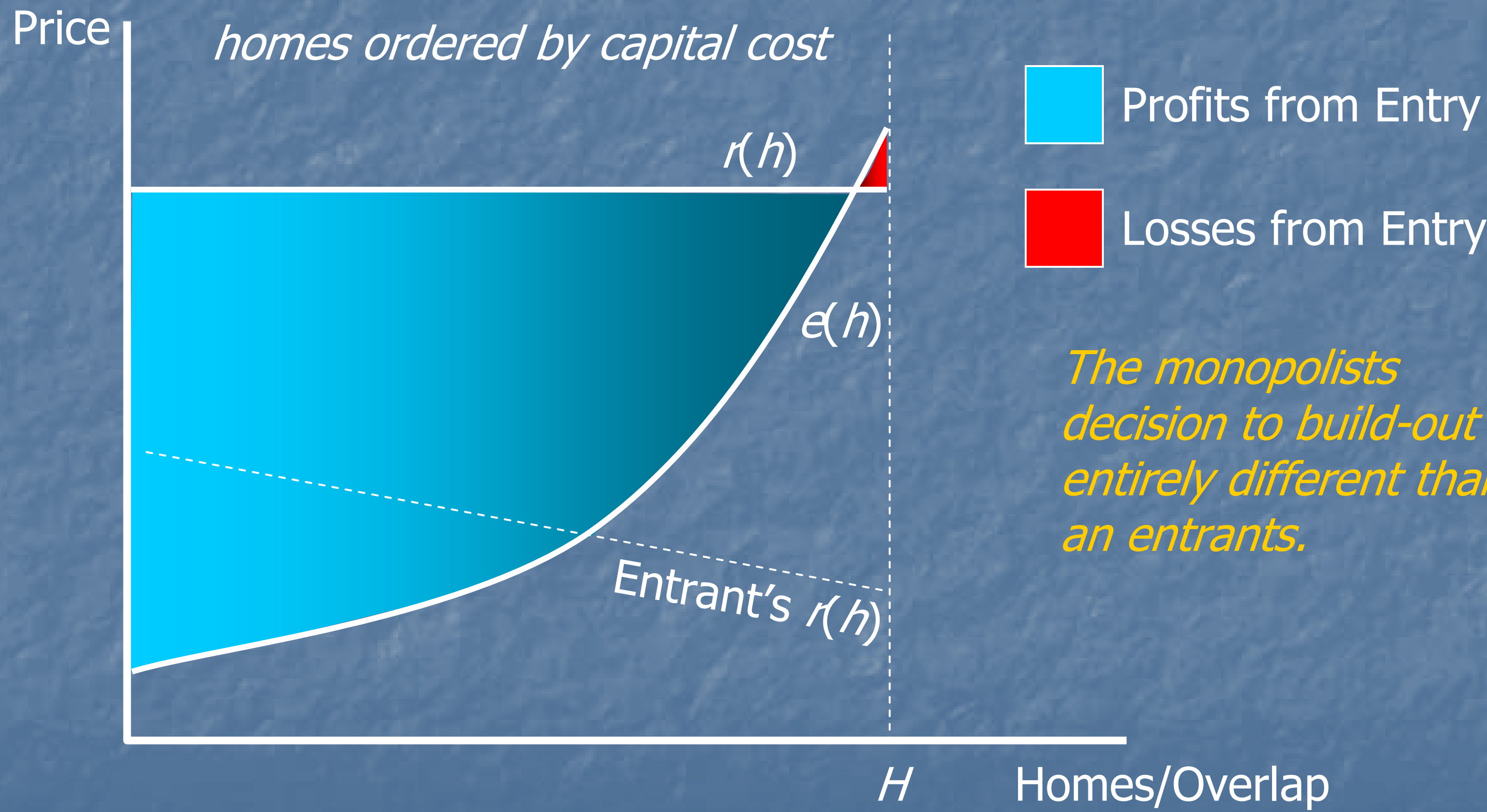
Free Entry Equilibrium



With Build-Out Rule



With Build-Out Rule:
The Monopoly's Decision



The monopolists decision to build-out is entirely different than an entrants.

Build-out Rule:
Matrix of Preferred Outcomes

Participant	Free Entry	Build-out Rule	
		Entry	No Entry
Consumers	2	1	3
Incumbent	2	3	1

Phoenix Center Policy Paper No. 22, Table 1.

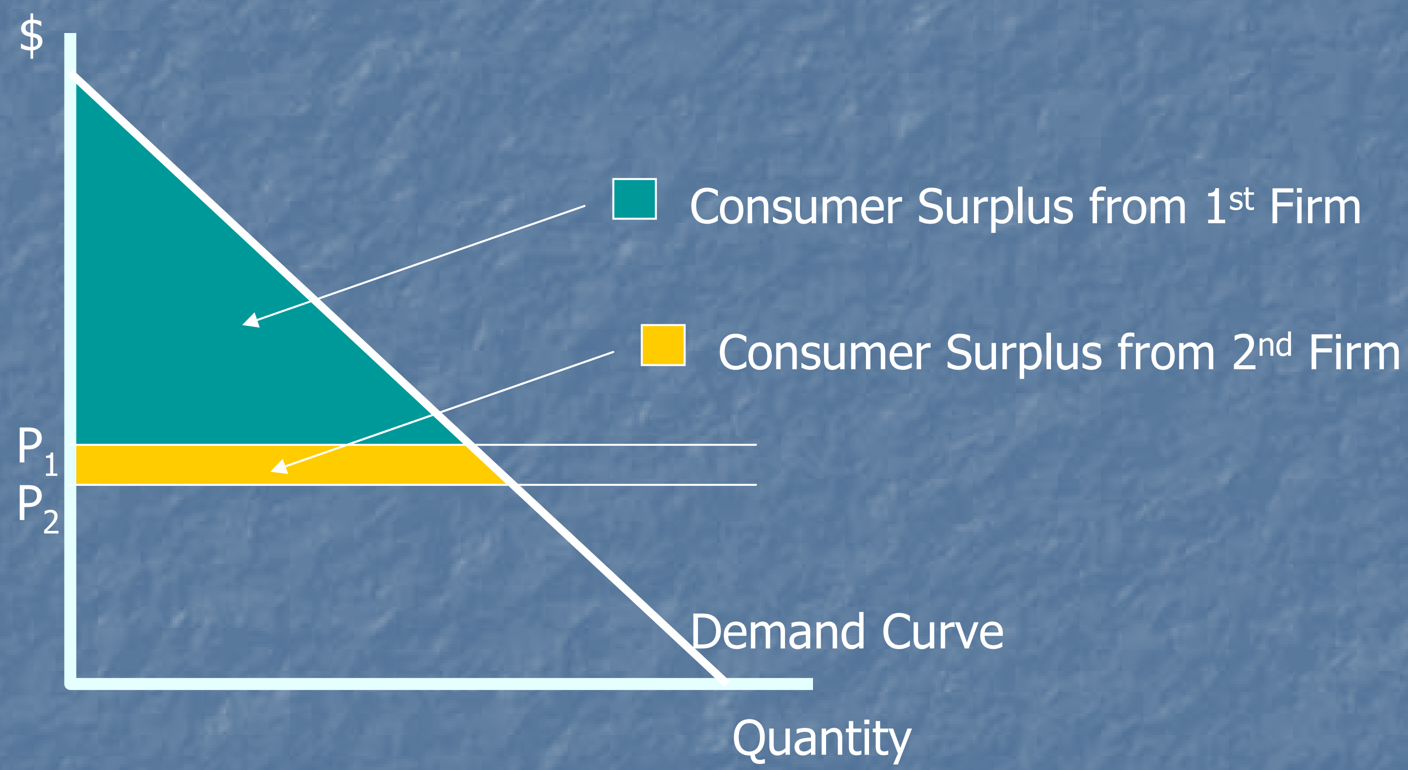
Build-Out Rules

- Simulations indicate that build-out rules deter entry in the vast majority of markets (80-90%), even under conservative assumptions
  - Policy Paper No. 22 and 25 (the latter forthcoming); Faulhaber & Hogendorn, 2000.
- Empirical evidence indicates that level-playing field mandates deter entry
  - Hazlett & Ford, 2001
  - 16 states have "level-playing-field" laws that increase the cost of video entry

Build-Out Rules

- Forthcoming Phoenix Center Policy Paper No. 25 presents cost-benefit analysis of build-out requirements imposed on entrants
- Cost/Benefits are measured in terms of Social Welfare
- Sufficient Condition is Intuitive
  - Build-out is welfare improving if the benefits to consumers not served without the rule exceed the costs of serving them
- Under nearly any set of plausible assumptions about market conditions in video, voice, and data, build-out requirements always flunk the cost-benefit test and by a large amount

Some Welfare Consequences of Build-out



The consumer gains from the second firm are much lower than from the first. Thus, the social welfare consequences (consumer gains plus lost profits from serving high-cost area) of build-out mandates on entrants are likely to be negative. But, that does not mean they were not socially desirable when placed on incumbents.

The Asymmetry of Symmetry

- Monopolist profit is $100. Duopoly profit is $40. Entry cost is $30.
  - With monopoly, profit is $70 (= 100 - 30).
  - With duopoly, profit is $10 (=40 - 30) for each firm.
- What if law makes entrants match incumbents entry costs?
  - Monopolist spends an additional $11 on entry cost.
  - Entrant's profits are -$1 (=40 – 41).
  - Monopolist's profits are $59 (=100 – 30 – 11).
- Symmetric regulation reinforces monopoly

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Hazlett & Ford, The Fallacy of Regulatory Symmetry (Business & Politics, 2001).

Convergence: The link between video and broadband deployment

- Phoenix Center Policy Paper No. 23
  - Networks being constructed today support voice, video and data services—increasing the cost of providing one service (video) increases the cost of providing another service (broadband)
  - We have a Federal policy goal of promoting open-entry for broadband services (Section 706 of the Act, FCC precedent)
  - The increased cost is important because video is a large portion of consumer spending on communications services
  - The impact is felt particularly hard in lower income neighborhoods, because in these areas, video revenues are particularly important to the business case for deployment

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Pew Survey

Monthly Communications Spending			
Service	Monthly	Percent	Percent Wireline
Telephone	$54	38%	50%
Mobile	$35	24%	
Internet	$14	10%	13%
Cable Television	$40	28%	37%

Source: Pew Internet & American Life Project survey October 2002 of 1,677 Americans.

Census 2003, Subscription Rates

Income	Telephone	Internet	Dial-up	Cable/DSL
5000 To 7499	94.2	20.3	14.0	5.9
7500 To 9999	96.5	19.6	14.2	5.0
10000 To 12499	97.1	22.8	16.5	6.2
12500 To 14999	97.2	24.6	18.2	5.8
15000 To 19999	96.8	29.5	21.5	7.8
20000 To 24999	97.8	36.9	26.7	9.9
25000 To 29999	98.3	42.6	29.6	12.0
30000 To 34999	98.4	49.0	35.1	13.2
35000 To 39999	98.7	57.7	41.9	15.0
40000 To 49999	99.2	66.3	45.2	20.2
50000 To 59999	99.2	71.9	47.0	24.0
60000 To 74999	99.4	79.9	49.8	29.1
75000 To 99999	99.3	84.2	48.0	35.2
100000 To 149999	99.7	90.4	42.3	46.4
150000 and Over	99.7	92.4	36.4	54.2

2005 GAO Study

Table 3: Three-Stage Least Squares Model Results

Variable	Cable prices equation	Cable subscribers equation
Cable price per channel		-2.6260 [0.0001][a]
Number of channels	0.3955 [0.0001][a]	
Number of cable subscribers	-0.0131 [0.1692]	
DBS penetration	-0.0476 [0.0152][b]	-1.4420 [0.0001][a]
DBS provision of local stations	0.0139 [0.4317]	
Regulation	0.0157 [0.2234]	
Number of broadcast stations		0.2838 [0.0366][b]
Median household income		-0.3974 [0.0358][b]
Horizontal concentration	[illegible]	

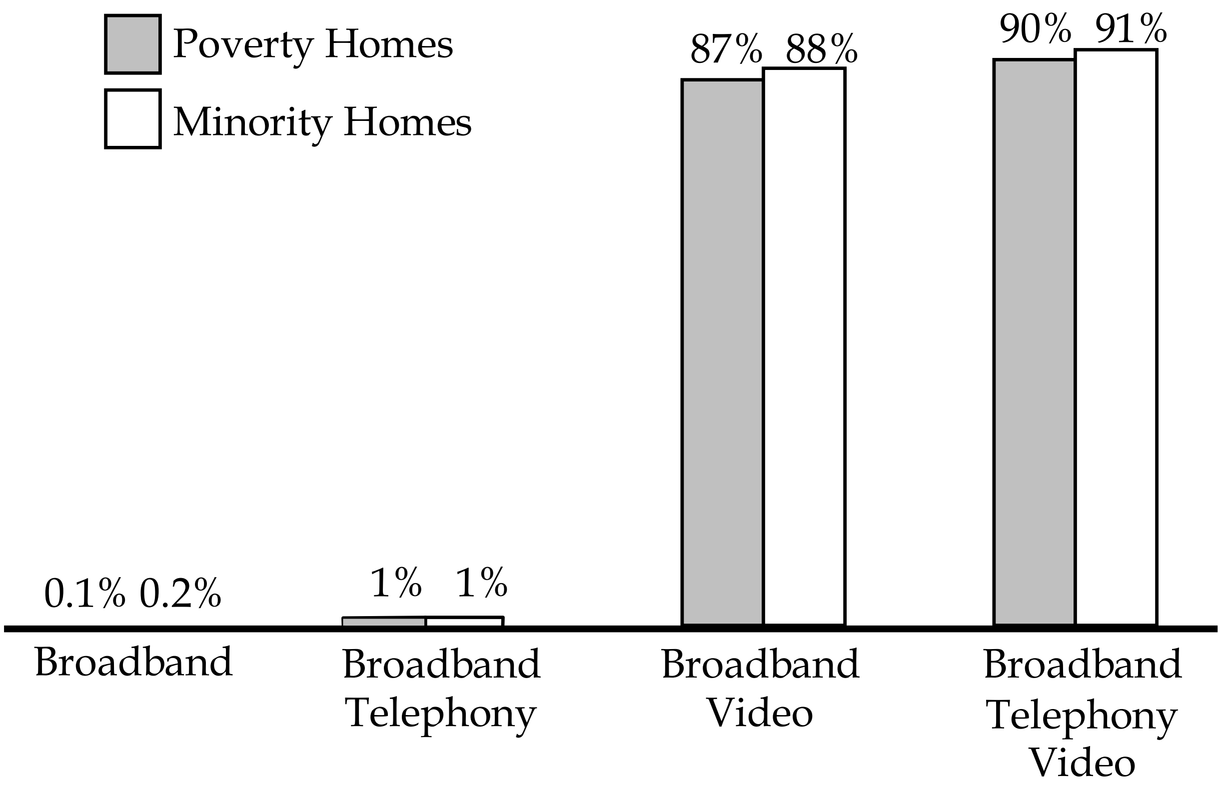
Cable Subscription and Income

- Mediamark Research, Inc.
  - Income < $25,000; 54%
  - $25,000 < Income < $49,999; 62%
  - $50,000 < Income < $74,999; 70%
  - Income > $75,000; 75%

- The business case for deploying an integrated voice, video and broadband network to low-income households *depends* upon the ability to sell video service
- Regulatory requirements that *increase* the cost of video deployment *effectively can create a type of broadband "red-lining" effect*
- Open video entry policies are the *solution* to a "Digital Divide"

Phoenix Center Policy Paper No. 23, Table 2 Homes Passed by Income Group (%)				
Block Groups by Median Income Range (y = income)	(a) Homes Passed (%): Broadband Only	(b) Homes Passed (%): Broadband + Telephone	(c) Homes Passed (%): Broadband + Video	(d) Homes Passed (%): Broadband + Telephone + Video
y < 20,000	-	-	84	88
20,000 < y <30,000	-	-	88	90
30,000 < y <40,000	-	-	93	95
40,000 < y <50,000	-	4	98	99
50,000 < y <60,000	1	9	100	100
60,000 < y <70,000	2	2	100	100
70,000 < y <80,000	9	54	100	100
80,000 < y <90,000	14	76	100	100
90,000 < y <100,000	34	92	100	100
100,000 < y <125,000	83	100	100	100
125,000 < y <150,000	97	97	100	100
y > 150,000	100	100	100	100

Figure 4. Percent of Below-Poverty and Minority Homes Passed



Other Phoenix Center Research:

Franchise Fee Revenues After Video Competition
Policy Bulletin No. 12

Consumer Welfare Cost of Franchise Reform Delay
Policy Bulletin No. 13

A La Carte and "Family Tiers"
Policy Bulletin No. 14

Video Franchise Fees

- $2.4 billion in 2004 – $37 from each household that subscribes to cable
- Assessed as percentage of “cable service” revenues, and often included advertising revenues of the cable operator
- Impact on network deployment recognized early – in 1972, FCC preempted franchise fees above 3% unless FCC approved higher rate

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Federal Cap: Section 622

- Franchise Fee may be no higher than 5% "gross revenues derived . . . from the operation of a cable system to provide cable services"
- DBS services exempt by statute
  47 U.S.C. § 152 nt

Video Entry will Lower Prices

2005 GAO Report

- Estimates significant price reductions (about 16%) in areas where there is wireline video entry
- Analysis based on 113 wireline "overbuilds"
- Cable industry given draft of study by GAO and did not provide any response or rebuttal
- Results consistent with several previous published studies on cable overbuilding over the last two decades, including papers (co)authored by Ford (1994, 2005)
- http://www.gao.gov/new.items/d05257.pdf

Cable industry's own survey shows lower prices where wireline competition – "there were anomalous circumstances in virtually all of the overbuild communities that made their rates artificially low"

http://www.ncta.com/pdf_files/101105_05-255_replies.pdf

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Lower Prices Will Change the Franchise Fee Tax Base

- Policy Bulletin No. 13 describes under what conditions lower prices will raise or lower the tax base
- As long as the market demand elasticity is elastic (larger than 1 in absolute value), revenues will rise as price falls
- Revenues are the tax base, so the same rule applies to franchise fee taxes

Demand Elasticity Estimates for Multichannel Video

Demand Elasticity Estimates for Multichannel Video Service		
Author	Year Published	*E*
GAO	2005	-2.7
GAO	2003	-1.5
GAO	2002	-2.1
GAO	2000	-3.2
Beard, *et al.*	2005	-2.7
Chipty	2001	-5.9
Ford, *et al.*	1997	-2.4
Rubinovits	1993	-1.5

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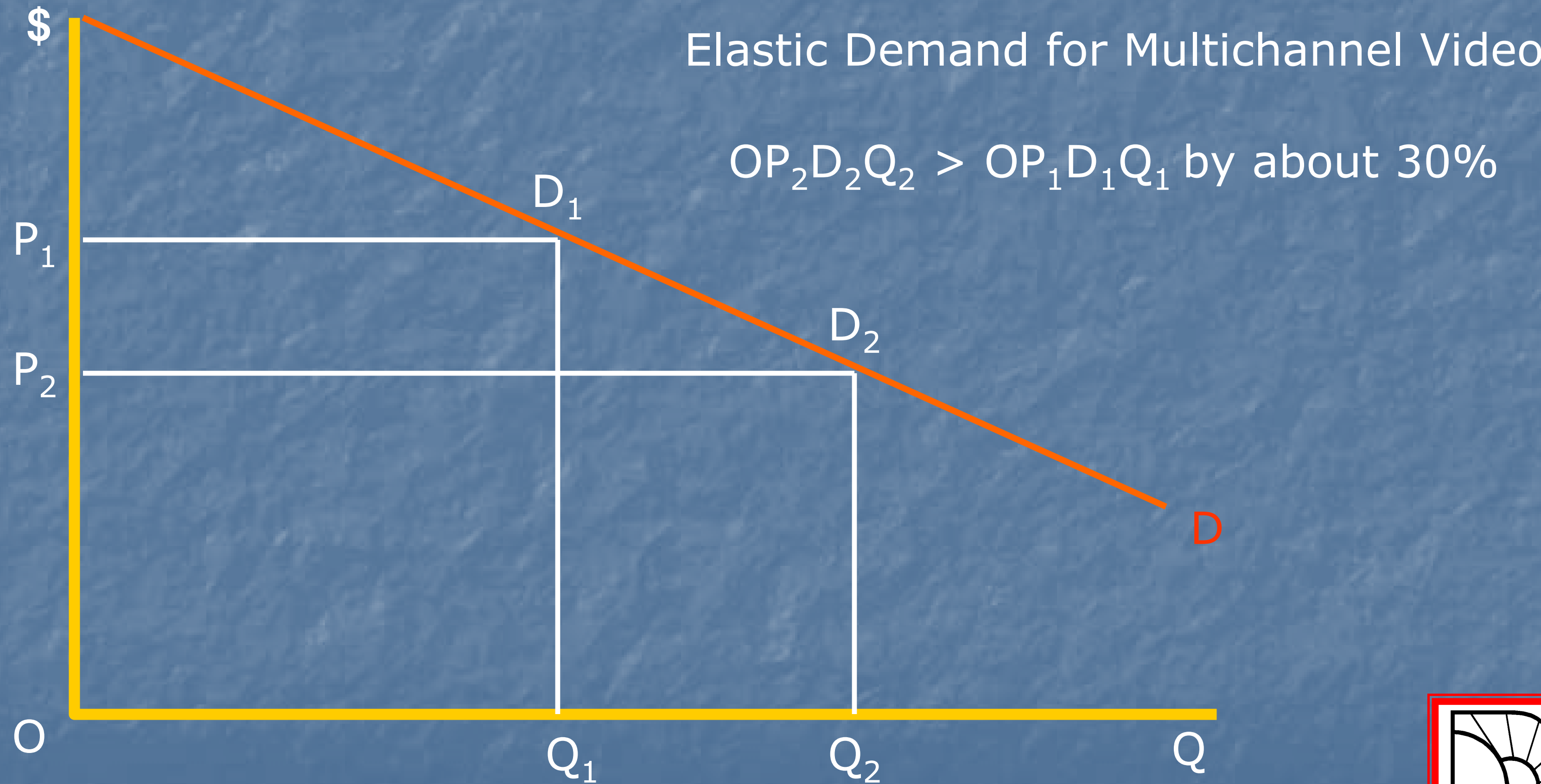
Demand Response from Successful Video Entry



Competition will Increase Franchise Fee Collections

- Competition in Video will increase the tax base for franchise fees
  - Market demand is elastic
  - Customers shift from Satellite (no franchise fee) to terrestrial providers
- We estimate a 30% increase in franchise fee tax base
  - Could hold cities harmless by reducing maximum franchise fee from 5% to 3.7%.

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The Cost of Delaying Reform

- Delay alters payoffs of alternative investments, possibly shifting capital to less socially desirable investments (i.e., away from fiber and broadband)
- Any loss of consumer gains today cannot be captured tomorrow. It is gone forever.

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The Cost of Delaying Reform

Cost of Capital	10%	
Investment	$1 Million	
	Annual Payment	Return
Project 1	$163,000	10%
Project 2	$187,000	15%
Project 2 with 5 Year Delay	187,000	9.3%

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“In Delay There is No Plenty”

- How much do consumers lose from a delay in franchise reform?
  - Under plausible assumptions, one year of delay costs consumers $8.2 billion.
  - A five year delay costs consumers $36 billion.

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A La Carte

- Policy Bulletin No. 14
  - Market structure in the programming distribution may be irrelevant to the bundling of undesirable programming
  - Programmers/Advertisers introduce a market defect the bundling decision

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Summary

- We are now faced with a facilities-based only entry method into local markets (video, voice, and data)
- We must remove any unnecessary barriers to facilities-based entry if we are to have competition
  - End market and service limitations
  - Eliminate Build-out Rules
  - Reduce taxes on entry

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